

CHARACTERISTICS OF POPULATION OF VISITORS TO SANDY BEACHES IN JAPAN USING MOBILE SPATIAL STATISTICS

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Sandy beaches are valuable for disaster mitigation, ecosystem, and recreational use. Coastal management for these purposes is often in conflict, and their balance should be considered to create a better coastal environment. Here, we focus on recreational use and evaluate the population dynamics on beaches nationwide using hourly mobile spatial statistics for four years from 2019 to 2022.

Mobile spatial statistics estimated using NTT DoCoMo's mobile network data were used for the demographic analysis. This data contains the hourly number of occurrences and their breakdown (sex, age, and prefecture of residence) at each 500-m mesh (Figure 1). The time-series analysis of population dynamics was conducted for 102 beaches in Japan, selecting meshes that did not include urban areas as much as possible.

Figure 2 shows an example of the monthly average of the number of people who appeared per hour by gender and age group. The value of 200 means a total of 148,800 appearances in the month. The results show that the COVID-19 effect is different depending on the location, and its effect is insignificant except for the period from April to June 2020 in the example shown here. It is also demonstrated marine sports are popular in this area because the number is large, more than 200 at maximum nevertheless most of the area is sea. The number is notably larger in August but not so small even in winter. The ratio of females to males did not show clear characteristics in the example, but the ratio decreased during the COVID-19 restriction period for some beaches. Figure 3 shows an example of the monthly average number of people who appeared per hour by prefecture of residence. This beach is used mainly by people who live in the prefecture where it is located but by people from other prefectures in summer.

This analysis was conducted for 102 sandy beach meshes, and we found that the influences of seasonal change and COVID-19 were different depending on the beach and that there are beaches where people come from all over Japan or from the same municipality. Detailed results of the analysis will be shown at ICCE 2024.

REFERENCES

Kubo, T. et al. (2020): Mobile phone network data reveal nationwide economic value of coastal tourism under climate change, *Tourism Management*, 77, 104010.

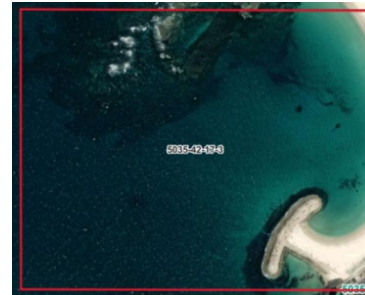


Figure 1. Mobile network 500-m mesh data (Esri Japan)

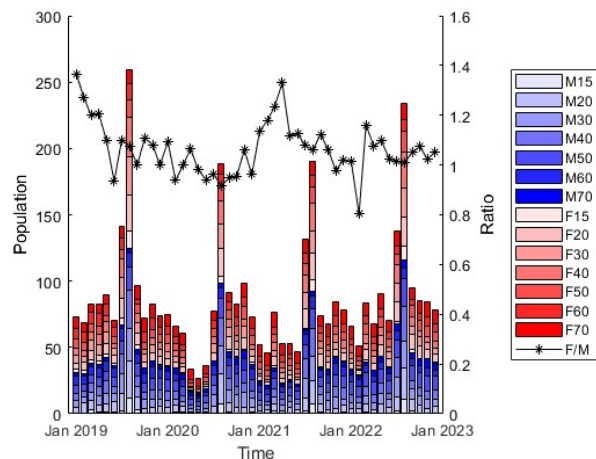


Figure 2. An example of a monthly average of the number of people who appeared per hour by gender and age at a 500-m mesh. The ratio of females to males is also shown.

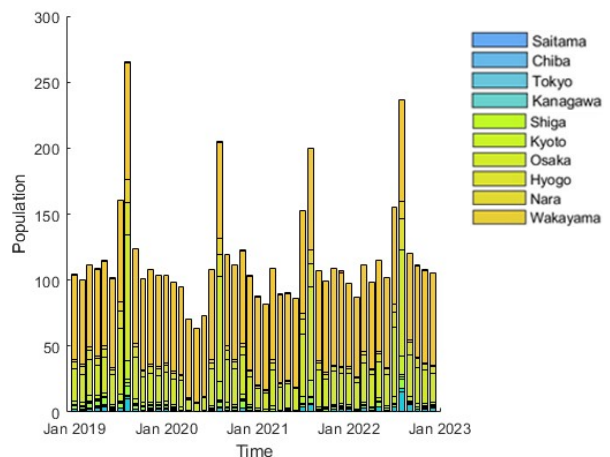


Figure 3. An example of the monthly average of the number of people who appeared per hour by prefecture of residence.